

Nalanda Open University
Annual Examination - 2017
B.Sc. Botany (Honours), Part-I
Paper-I

Time: 3.00 Hrs.

Full Marks: 80

Answer any Five questions. All questions carry equal marks.

1. Describe the structure and reproduction of *Nostoc*.
2. Describe the structure and reproduction of *Volvox*.
3. Describe general characters of Fungi. Name basis for classification of Fungi.
4. How a Rust Fungi (puccinia) completes its life cycle on two host. Describe life cycle on any one of the host.
5. Describe general characteristics and classification of Lichens.
6. Describe life cycle of *Anthoceros*. what are phylogenetic significance in its life cycle ?
7. Describe life cycle and evolutionary significance of *Psilotum*.
8. Write short notes on any two of the following:
 - (a) Cap cells of oedogonium
 - (b) Apothecia
 - (c) Elaters
 - (d) Strobilus of selaginella.
9. Describe the anatomical features of rhizome and petiole of *Marsilea*.
10. Explain the evolutionary significance of Pteridophytes.



Examination Programme, 2017 (Revised)
B.Sc (Part – I) All Honours Subjects
Except Home Science, Geography & Statistics Honours
(गृह विज्ञान, भूगोल और सांख्यिकी ऑनर्स को छोड़कर)

Date	Papers.	Time	Examination Centre
20/3/2017	(Hons) P-I	3.30 to 6.30 pm	Nalanda Open University, Patna
22/3/2017	(Hons) P-II	3.30 to 6.30 pm	Nalanda Open University, Patna
24/3/2017	Rastrabhsha-100 or Hindi+Urdu 100	3.30 to 6.30 pm	Nalanda Open University, Patna
27/3/2017	Math (Sub) P-I	8.00 to 11.00 am	Nalanda Open University, Patna
28/3/2017	Geography (Sub) P-I	8.00 to 11.00 am	Nalanda Open University, Patna
29/3/2017	Chemistry (Sub) P-I	8.00 to 11.00 am	Nalanda Open University, Patna
30/3/2017	Home Science (Sub)-P I	8.00 to 11.00 am	Nalanda Open University, Patna
31/3/2017	Zoology (Sub) P-I	8.00 to 11.00 am	Nalanda Open University, Patna
03/4/2017	Physics (Sub) P-I	8.00 to 11.00 am	Nalanda Open University, Patna
04/4/2017	Botany (Sub) P-I	8.00 to 11.00 am	Nalanda Open University, Patna
05/4/2017	Statistics (Sub) P-I	8.00 to 11.00 am	Nalanda Open University, Patna

Nalanda Open University
Annual Examination - 2017
B.Sc. Botany (Honours), Part-I
Paper-II

Time: 3.00 Hrs.

Full Marks: 80

Answer any Five questions. All questions carry equal marks.

1. Give a general account of gymnosperms.
2. Describe the development of female gametophyte of Pinus.
3. Give an account of the development of male gametophyte of Gnetum.
4. Name fossil flora of Bihar and Jharkhand. Describe the life cycle of any one of them.
5. Describe the seed of Lyginopteris. Mention its phylogenetic value.
6. Describe the classification of Angiosperms as proposed by Bentham and Hooker.
7. Describe the floral characters. floral diagram, floral formula, plants of economic importance of any one of the following:
 - (a) Ranunculaceae
 - (b) Acanthaceae
8. Describe the rules of international code of botanical nomenclature.
9. Write short notes on any four of the following:
 - (a) Transfusion tissue
 - (b) Verticillaster
 - (c) Hypantodium
 - (d) Sporophyte of Rhynia
 - (e) Fructification of Calamites
 - (f) Four plants of economic importance (botanical names)
10. Write briefly about the modern system of classification of angiosperms.



Programme of B.Sc. Part-I Botany (Hons.)
Practical Counselling and Examination 2017
Venue : 1st Floor, Botany Lab, Biscomaun Tower, Patna
(A) Practical Counselling Class

<i>Date</i>	<i>Paper</i>	<i>Time</i>	<i>Roll No</i>
06.04.2017	I & II	09.00 AM to 01.00 PM	All Students Botany (Hons.)

(B) Practical Examination

<i>Date</i>	<i>Time</i>		<i>Roll No.</i>
	<i>09:00 AM to 11:00 AM</i>	<i>11:00 AM to 01:00 PM</i>	
07.04.2017	Paper-I	Paper-II	All Botany (Hons.) Students

Nalanda Open University
Annual Examination - 2017
B.Sc. Botany (Subsidiary), Part-I
Paper-I

Time: 3.00 Hrs.

Full Marks: 80

Answer any Five questions. All questions carry equal marks.

1. Describe properties and structure of a Bacteriophage.
2. Describe structure and reproduction of *oedogonium*.
3. Describe life cycle of *Albugo*.
4. Give an account of sporophyte of *Sphagnum*.
5. Describe the strobilus of *Selaginella*. What is its significance in heterospory?
6. Describe the mode of reproduction in a Pteridophyte studied by you.
7. Describe any four of the following:
 - (a) Syncarpous
 - (b) Zygomorphic
 - (c) Cyathium
 - (d) Verticillaster
 - (e) Placentation
 - (f) Floral diagram
8. Describe floral characters, floral formula and floral diagram of family Lamiaceae. Write botanical names of two plants of the family.
9. Describe characteristic feature of a gymnosperm studied by you.
10. Assign the following plants to their family.
 - (a) Potato
 - (b) Turnip
 - (c) Cucumis
 - (d) Ricinus
 - (e) Rice
 - (f) Wheat
 - (g) Mentha
 - (h) Mango



Nalanda Open University

Annual Examination - 2017

B.Sc. Botany (Honours), Part-II

Paper-III

Time: 3.00 Hrs.

Full Marks: 80

Answer Five questions, selecting atleast one question from each group A, B and C.

All questions carry equal marks.

Group - A (Microbiology)

1. Give an account of ultra structure of Tobacco mosaic virus. How do they reproduce ?
2. What is Conjugation ? Describe the process of conjugation in bacteria.
3. Name few uses of Bacteria in industries.

Group - B (Plant Pathology)

4. Describe the role of enzymes in pathogenesis.
5. Write pathological notes on any two of the following :-
(a) Late blight of potato (b) Citrus canker
(c) Biochemical defiance of the host (d) Early blight of Potato
6. Write etiology, symptoms and control of wilt of pigeon pea.
7. Describe toxins and their role in disease development.

Group - C (Embryology)

8. What are Endosperms ? What is its significance in Plant ?
9. Write Short notes on any two of the following :-
(a) Double fertilization (b) Anther culture
(c) Apomixis (d) Parthenocarpy
10. Give an account of development of any one type of embryo sac studied by you.



Examination Programme, 2017

(Bachelor of Science (Part-II))

All Subjects Except B.Sc Geography & Home Science (Honours)

Date	Paper	Time	Name of Examination Centre
23/2/2017	HONOURS PAPER – III	8.00 to 11.00 am	Nalanda Open University, Patna
25/2/2017	HONOURS PAPER – IV	8.00 to 11.00 am	Nalanda Open University, Patna
27/2/2017	Hindi 100 or Ur 50+Hn 50	8.00 to 11.00 am	Nalanda Open University, Patna
01/3/2017	(SUB.) (Botany - II)	8.00 to 11.00 am	Nalanda Open University, Patna
02/3/2017	(SUB.) (Mathematics - II)	8.00 to 11.00 am	Nalanda Open University, Patna
04/3/2017	(SUB.) (Chemistry - II)	8.00 to 11.00 am	Nalanda Open University, Patna
06/3/2017	(SUB.) (Physics - II)	8.00 to 11.00 am	Nalanda Open University, Patna
07/3/2017	(SUB.) (Zoology - II)	8.00 to 11.00 am	Nalanda Open University, Patna
09/3/2017	(SUB.) (Geography - II)	8.00 to 11.00 am	Nalanda Open University, Patna
11/3/2017	(SUB.) (Home Science- II)	8.00 to 11.00 am	Nalanda Open University, Patna
16/3/2017	(SUB) Statistics-II)	8.00 to 11.00 am	Nalanda Open University, Patna

Nalanda Open University, Patna

Programme of B.Sc. Part-II Botany (Hons.),

Practical Class and Practical Examination, 2017

Venue:- 1st Floor, Biology Lab, Biscomaun Tower, Patna

(A) Practical Counselling Class

Date	Paper	Time
16.03.2017	III & IV	11.15 AM to 05.45 PM

(B) Practical Examination

Date	Paper	Time
17.03.2017	III	11.15 AM to 02.15 PM
17.03.2017	IV	02.30 PM to 05.30 PM

Nalanda Open University

Annual Examination - 2017

B.Sc. Botany (Honours), Part-II

Paper-IV

Time: 3.00 Hrs.

Full Marks: 80

Answer Five questions, selecting atleast one question from each group A, B and C.

All questions carry equal marks.

Group - A (Anatomy)

1. Describe the anatomical feature of xerophytic plants.
2. Define tissue. Describe different types of tissues found in plants.
3. What is abnormal secondary growth? Describe abnormal secondary growth in Boernaavia plant.

Group - B (Cell Biology)

4. Describe detailed structure of Mitochondria. What is its function?
5. What are enzymes? Describe the classification of enzymes.
6. Write short notes on any four of the following:
 - (a) Nucleotide
 - (b) Nucleosome
 - (c) Structure of chromosome
 - (d) Functions of Corbohydrate
 - (e) Alkaloids
 - (f) Micronutrients
7. What are lipids? Classify different types of lipids.
8. Give an account of lipids.

Group - C (Economic Botany)

9. Give an account of pulses of Bihar.
10. Write the botanical name of.
 - (a) Two medicinal plants.
 - (b) Two fruit yielding plants
 - (c) Two vegetable, yielding plants
 - (d) Two spices yielding plants



Examination Programme, 2017

(Bachelor of Science (Part-II))

All Subjects Except B.Sc Geography & Home Science (Honours)

Date	Paper	Time	Name of Examination Centre
23/2/2017	HONOURS PAPER – III	8.00 to 11.00 am	Nalanda Open University, Patna
25/2/2017	HONOURS PAPER – IV	8.00 to 11.00 am	Nalanda Open University, Patna
27/2/2017	Hindi 100 or Ur 50+Hn 50	8.00 to 11.00 am	Nalanda Open University, Patna
01/3/2017	(SUB.) (Botany - II)	8.00 to 11.00 am	Nalanda Open University, Patna
02/3/2017	(SUB.) (Mathematics - II)	8.00 to 11.00 am	Nalanda Open University, Patna
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06/3/2017	(SUB.) (Physics - II)	8.00 to 11.00 am	Nalanda Open University, Patna
07/3/2017	(SUB.) (Zoology - II)	8.00 to 11.00 am	Nalanda Open University, Patna
09/3/2017	(SUB.) (Geography - II)	8.00 to 11.00 am	Nalanda Open University, Patna
11/3/2017	(SUB.) (Home Science- II)	8.00 to 11.00 am	Nalanda Open University, Patna
16/3/2017	(SUB) Statistics-II)	8.00 to 11.00 am	Nalanda Open University, Patna

Nalanda Open University, Patna

Programme of B.Sc. Part-II Botany (Hons.),

Practical Class and Practical Examination, 2017

Venue:- 1st Floor, Biology Lab, Biscomann Tower, Patna

(A) Practical Counselling Class

Date	Paper	Time
16.03.2017	III & IV	11.15 AM to 05.45 PM

(B) Practical Examination

Date	Paper	Time
17.03.2017	III	11.15 AM to 02.15 PM
17.03.2017	IV	02.30 PM to 05.30 PM

Nalanda Open University
Annual Examination - 2017
B.Sc. Botany (Subsidiary), Part-II
Paper-II

Time: 3.00 Hrs.

Full Marks: 80

Answer any Five questions. All questions carry equal marks.

1. What are Meristems? Name different types of meristems.
2. Give an account of root-stem transition.
3. Describe the process of fertilization in angiosperm.
4. Describe the ultrastructure of chloroplast.
5. What is endosperm? Describe different types of Endosperm found in angiosperms.
6. Describe the process of transpiration in plants.
7. What do you mean by ecosystem? Describe a forest ecosystem.
8. Name four drug yielding plants of Bihar. Write their botanical names and medicinal importance.
9. Describe Krebs's cycle.
10. Write notes on any four of the following:
 - (a) Acid rain
 - (b) Green house effect
 - (c) Soil conservation
 - (d) Structure of DNA
 - (e) Air pollution
 - (f) Two cereal yielding plants.



Nalanda Open University, Patna
Programme of B.Sc. Part-II Botany (Subsidiary)
Practical Class and Examination, 2017
Venue:- 1st Floor, Biology Lab Biscomaun Tower,, Patna

(A) Practical Counselling Class

<i>Date</i>	<i>Time</i>	<i>Paper</i>
18.03.2017	08.30 A.M. to 11.30 AM	Botany(Sub) for all (Hons) Students

(B) Practical Examination

<i>Date</i>	<i>Time</i>	<i>Paper</i>
20.03.2017	08.30 A.M. to 11.30 AM	Botany(Sub) for all (Hons) Students

Nalanda Open University
Annual Examination - 2017
B.Sc. Botany (Honours), Part-III
Paper-V (Physiology and Biochemistry)

Time: 3.00 Hrs.

Full Marks: 80

*Answer any five questions. Questions No. 1 is compulsory.
All questions carry equal marks.*

1. Multiple choice questions:
 - (i) Plants require Fe and Mg for:
 - (a) Synthesis of chlorophyll
 - (b) Opening and closing of stomata
 - (c) Translocation of Carbohydrates
 - (d) None of these.
 - (ii) Plants absorb the element nitrogen in the form:
 - (a) Nitrogen gas
 - (b) Nitrites
 - (c) Nitrates
 - (d) Nitric acid
 - (iii) In kreb's cycle, a six carbon compound is formed by the combination of Acetyl Co A and
 - (a) Citric acid
 - (b) Malic acid
 - (c) Oxaloacetic acid
 - (d) Succinic acid
 - (iv) The Photosynthetic activity of chlorophyll is maximum in
 - (a) Violet and Red Light
 - (b) Violet Light
 - (c) Blue light
 - (d) Red Light
 - (v) The first kinetin isolated by muller was from
 - (a) Coconut endosperm
 - (b) Maize grains
 - (c) Herring sperm DNA
 - (d) Wheat grains.
 - (vi) Elongation of dwarf of plants is achieved by treatment with
 - (a) Auxin
 - (b) Zeatin
 - (c) Cytokinin
 - (d) Cabberrelin
 - (vii) Plasmolysis occurs due to
 - (a) Absorption
 - (b) Osmosis
 - (c) Endoosmosis
 - (d) Exoosmosis
 - (viii) Transpiration is least in
 - (a) High atmospheric humidity
 - (b) High temperature
 - (c) High wind velocity
 - (d) None of these
2. Describe the role of auxins in Physiology of plants.
3. Describe the role of micro nutrient and macro-nutrients in plants.
4. Describe the mechanism of opening and closing of stomata.
5. What is anaerobic respiration? Describe, glycolyte pathway in detail.
6. Describe different stages of Nitrogen cycle.
7. Show the difference between C₃ and C₄ cycle with suitable example.
8. Write short notes on any two of the following:
 - (a) Phytochrome system
 - (b) Difference between cyclic and non-cyclic photophospho relation.
 - (c) Trace elements and its role
9. Give an account of the mechanism of geotropism
10. Write notes on any *Four* of the following :
 - (a) Imbibition
 - (b) Diffusion
 - (c) Plasmolysis
 - (d) Carrier concept of ion uptake in plant cells.



Programme of B.Sc. Part-III Botany (Hons.)

Annual Practical Counselling & Practical Examination - 2017

Venue : 1st Floor Biology Lab, Biscomaun Tower, Patna - 800 001

(A) Practical Counselling Botany

<i>Date</i>	<i>Time</i>	<i>Paper</i>
23.02.2017 to 25.02.2017	11.15 AM to 05.45 PM	V to VIII

(B) Practical Examination Botany

<i>Date</i>	<i>Time</i>	
	<i>11:15 AM to 2:15 PM</i>	<i>2:45 PM to 5:45 PM</i>
27.02.2017	Paper-V	Paper-VI
28.02.2017	Paper-VII	Paper-VIII

Examination Programme-2017 B.Sc (Part-III) Botany, Chemistry, Mathematics, Physics & Zoology Honours

Date	Papers	Time	Examination Centre
14/2/2017	Honours Paper-V	8 to 11 AM	Nalanda Open University, Patna
16/2/2017	Honours Paper-VI	8 to 11 AM	Nalanda Open University, Patna
18/2/2017	Honours Paper-VII	8 to 11 AM	Nalanda Open University, Patna
20/2/2017	Honours Paper-VIII	8 to 11 AM	Nalanda Open University, Patna
22/2/2017	Paper -XV (General Studies)	8 to 11 AM	Nalanda Open University, Patna

Nalanda Open University
Annual Examination - 2017
B.Sc. Botany (Honours), Part-III
Paper-VI (Environmental Biology)

Time: 3.00 Hrs.

Full Marks: 80

Answer any five questions. Questions No. 1 is compulsory. All questions carry equal marks.

1. Multiple choice questions :

- (i) The major pollutant from automobile exhaust is:
(a) NO (b) CO
(c) SO₂ (d) Soot
- (ii) A high biological Oxygen demand (BOD) indicates that:
(a) Water is pure (b) Absence of microbial action
(c) Low level of microbial pollution (d) High level of microbial pollution.
- (iii) Study of ecology of population is called
(a) Autecology (b) Synecology
(c) Demecology (d) Ecotype
- (iv) Which of the ecological pyramid is always upright?
(a) Pyramid of number (b) Pyramid of biomass
(c) Pyramid of energy (d) All of these
(v) Which of the following is having both hydrophytic and xerophytic characters
(a) *Typha* (b) *Nerium* (c) *Ranunculus*
(d) *Ceratophyllum*
- (vi) Which of the following is not an air pollutant?
(a) Fallen from plants (b) Hydrarbones (c) Sulphur dioxide
(d) Phosphates
- (vii) The Red data book maintains a record of the
(a) Plants and animals present in the whole world
(b) Relationship between man and biosphere
(c) Plants and animals which known to be endangered
(d) Forest world in the whole world.

2. Define ecosystem? Describe various components of ecosystem with suitable examples.

3. What do you understand by the term ecological succession? Describe ecological succession in a virgin pond.

4. Describe, how a hydrophytic plants adapt themselves for living in water habitat?

5. What is ecological pyramid? Describe:

- (a) Food chain in grassland (b) Food chain in a Pond

6. Write an essay on water pollution? Describe ill effects of water pollution.

7. Describe different categories of natural resources.

8. What do you mean by conservation of biodiversity? Describe methods adopted for conservation of biodiversity.

9. Explain briefly

- (i) Agro forestry and its significance
(ii) Social forestry and its significance

10. Write short notes on any four of the following

- (a) Plant indicator (b) Significance of protected area

- (c) Green house gases (d) Acid rain
 (e) Chipko movement (f) Non-conventional energy.



Programme of B.Sc. Part-III Botany (Hons.)

Annual Practical Counselling & Practical Examination - 2017

Venue : 1st Floor Biology Lab, Biscomaun Tower, Patna - 800 001

(A) Practical Counselling Botany

<i>Date</i>	<i>Time</i>	<i>Paper</i>
23.02.20 17 to 25.02.20 17	11.15 AM to 05.45 PM	V to VIII

(B) Practical Examination Botany

<i>Date</i>	<i>Time</i>	
	<i>11:15 AM to 2:15 PM</i>	<i>2:45 PM to 5:45 PM</i>
27.02.20 17	Paper-V	Paper-VI
28.02.20 17	Paper-VII	Paper-VIII

Nalanda Open University
Annual Examination - 2017
B.Sc. Botany (Honours), Part-III
Paper-VII (Cytogenic and Molecular Biology)

Time: 3.00 Hrs.

Full Marks: 80

Answer any five questions. Questions No. 1 is compulsory. All questions carry equal marks.

1. Multiple choice questions :
 - (i) The core of nucleosome is made up of two molecules each of
 - (a) H₁, H_{2A}, H_{2B} H₃
 - (b) H₁, H_{2A}, H_{2B}, H₄
 - (c) H₁, H_{2A}, H_{2B}, H₃, H₄
 - (d) M_{2A}, H_{2B}, H₃, H₄
 - (ii) Synthesis of RNA and proteins takes place in:
 - (a) S-phase
 - (b) G₁-phase
 - (c) G₁ & G₂ phase
 - (d) M-phase
 - (iii) The clover leaf structure of tRNA was given by:
 - (a) Jacob & Monad
 - (b) Hoagland
 - (c) Halley
 - (d) All of them.
 - (iv) Extra nuclear genes occur in
 - (a) Mitochondria & cytoplasm
 - (b) Ribosomes & cytoplasm
 - (c) ER & Cytoplasm
 - (d) Cytoplasm only
 - (v) The lowest level of chromosome organization is
 - (a) Solenoid
 - (b) Nucleosome
 - (c) 30 nm fiber
 - (d) None of these
 - (vi) Chromatin has:
 - (a) DNA
 - (b) DNA and protein
 - (c) DNA, RNA and proteins
 - (d) None of these.
 - (vii) The quickest method of plant breeding is :
 - (a) Introduction
 - (b) Selection
 - (c) Hybridization
 - (d) Mutation breeding
 - (viii) Which of the following is not true of DNA
 - (a) A pairs with T and G pairs with C
 - (b) Nitrogen bases are 0.34 apart on a DNA strand
 - (c) The double helix is 2.0 nm wide
 - (d) The double helix is 3.4 nm wide.
2. Describe in detail chemical and physical structure of DNA
3. What is cell cycle? Explain its significance.
4. Define linkage? Give one example to explain linkage.
5. What do you understand by the term interaction of gene. Give one example to explain it.
6. Describe different stages of mitosis. Explain its significance.
7. Write short notes on any two of the following.
 - (a) Nucleosome
 - (b) Histone protein
 - (c) Euchromatin
8. Describe various methods adopted in plant breeding.
9. How can you prove that DNA is the genetic material?
10. Write short notes on :
 - (a) Types of RNA
 - (b) Significance of meiosis



Programme of B.Sc. Part-III Botany (Hons.)

Annual Practical Counselling & Practical Examination - 2017

Venue : 1st Floor Biology Lab, Biscamaun Tower, Patna - 800 001

(A) Practical Counselling Botany

Date	Time	Paper
23.02.2017 to 25.02.2017	11.15 AM to 05.45 PM	V to VIII

(B) Practical Examination Botany

Date	Time	
	11:15 AM to 2:15 PM	2:45 PM to 5:45 PM
27.02.2017	Paper-V	Paper-VI

28.02.2017	Paper-VII	Paper-VIII
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Nalanda Open University

Annual Examination - 2017

B.Sc. Botany (Honours), Part-III

Paper-VIII (Genetics)

Time: 3.00 Hrs.

Full Marks: 80

Answer any five questions. Questions No. 1 is compulsory. All questions carry equal marks.

1. Multiple choice questions :
 - (i) A cross in which parents differ in a single pair of contrasting character is called:
 - (a) Monohybrid cross
 - (b) Dihybrid cross
 - (c) Tri-hybrid cross
 - (d) Tetrahybrid cross
 - (ii) The crossing of F_1 to any one of the parents is called:
 - (a) back cross
 - (b) test cross
 - (c) F_1 cross
 - (d) all of these
 - (iii) crossing over occurs during:
 - (a) Pachytene
 - (b) Diplotene
 - (c) Diakinesis
 - (d) Leptotene
 - (iv) Patau's syndrom occurs due to
 - (a) Trisomy of 13th chromosme
 - (b) Trisomy of 18th chromosome
 - (c) Trisomy of 21st Chromosome
 - (d) Trisomy f 22nd chromosome.
 - (v) Plasmid vectors are:
 - (a) PBR 322
 - (b) PUC vectors
 - (c) F-factors based vector
 - (d) All of the above
 - (vi) Which of the following carries the anticodon?
 - (a) tRNA
 - (b) rRNA
 - (c) mRNA
 - (d) None of the above
 - (vii) A very important method in plant breeding is :
 - (a) Transformation
 - (b) Hybridization
 - (c) Duplication
 - (d) Heterosis.
 - (viii) Polyploidy is artificaiially induced by:
 - (a) Colchicine
 - (b) Gibberellin
 - (c) Auxin
 - (d) Kinin
2. Define mutation? Describe type of mutation and explain anyone of them in detail.
3. Explain polyploidy, what are the types of polyploidy? How polyploidy can be useful?
4. Give an account of prophase I of merosis. What is its significance
5. Write shor notes on anytwo of the following:
 - (a) Pedigree analysis
 - (b) Inborn error of metabolism
 - (c) ex-situ conservation of germ plasm.
6. Write short notes on any two of the following:
 - (a) Mean
 - (b) Median
 - (c) Mode
 - (d) Standard deviation.
7. Define interaction of gene. Give one example to prove interaction of gene.
8. Write short notes on anytwo of the following.
 - (a) Banding technique
 - (b) Plasmid vector
 - (c) Initiation codon and termination codon
 - (d) Chemical mutagens.
9. What is genetic engineering? Explain different application of genetic engineering for human welfare.
10. What is genetic code? Describe the characteristics of genetic code.

